

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Part 101 of the Commission's	)	
Rules to facilitate the Use of Microwave for	)	
Wireless Backhaul and Other Uses and to	)	WT Docket No. 10-153
Provide Additional Flexibility to Broadcast	)	
Auxiliary Service and Operational Fixed	)	
Microwave Licensees	)	
	)	
Request for Interpretation of Section	)	
101.141(a)(3) of the Commission's Rules Filed	)	WT Docket No. 09-106
by Alcatel-Lucent, Inc., <i>et al.</i>	)	
	)	
Petition for Declaratory Ruling Filed by	)	WT Docket No. 07-121
Wireless Strategies, Inc.	)	
	)	
Request for Temporary Waiver of Section	)	
101.141(a)(3) of the Commission's Rules Filed	)	
by Fixed Wireless Communications Coalition	)	

**COMMENTS OF STRATOS OFFSHORE SERVICES COMPANY**

Stratos Offshore Services Company ("Stratos") hereby submits its Comments on the Commission's *Notice of Proposed Rulemaking and Notice of Inquiry* ("*NPRM and NOI*") in the above-captioned proceeding.<sup>1</sup> As the largest provider of critical wireless communications services to the oil and gas industry in the Gulf of Mexico, Stratos has very serious concerns regarding the Commission's suggestion that it might permit Part 101 point-to-point licensees to conduct *de facto* point-to-multipoint operations via their side lobe transmissions (also referred to herein as "auxiliary links" or "auxiliary stations), per an earlier proposal put forth by Wireless Strategies Inc. ("WSI") and since modified in the *NPRM and NOI* (the "WSI Proposal").<sup>2</sup>

---

<sup>1</sup> See WT Docket No. 10-153 *et al.*, FCC 10-146 (rel. Aug. 5, 2010) [*"NPRM and NOI"*].

<sup>2</sup> *Id.* at ¶¶ 50-58.

## I. INTRODUCTION.

Stratos is an international provider of communications services, the most important of which for purposes of these proceedings is its comprehensive communications network in the Gulf of Mexico. That network, consisting of microwave, satellite, and other forms of radio communications, links together hundreds of offshore oil and gas exploration and production platforms and ancillary facilities. Stratos' customers rely on these communications resources to, among other things, monitor unmanned facilities, control sea traffic and, in the event of emergencies, coordinate fire, safety and rescue personnel.<sup>3</sup> As recognized by the Commission, Stratos currently serves over 60% of the oil and gas rigs and platforms in the Gulf.<sup>4</sup> In fact, Stratos is the *sole* provider of critical communications services in many portions of the Gulf, as other communications systems are not readily available to connect the numerous oil and gas facilities and personnel in the area.

Stratos's network in the Gulf presently has 91 terrestrial sites that operate microwave links in both the lower and upper 6 GHz bands under Part 101 of the Commission's Rules. Operation of those links on an interference-free basis is already a significant challenge due to the

---

<sup>3</sup> By way of example, Stratos recently announced that it has commenced deployment of its new StratosMAX II broadband service across the Gulf of Mexico (GoM) region. StratosMAX II provides last-mile radio connectivity by connecting customers back to shore through diverse shore crossings and Stratos's onshore interconnection facilities. In addition, StratosMAX II provides reliable voice service, high-speed Internet connectivity, WiFi "hotspot" service and a wide range of mobile communications applications to oil rigs, platforms, offshore vessels and professionals managing the Gulf Oil Disaster containment and cleanup efforts. See Press Release, "Stratos Deploys New StratosMAX II Broadband Service in Gulf of Mexico" (Sept. 1, 2010) [http://www.stratosglobal.com/About\\_Stratos/Newsroom/News\\_Releases/2010/2010-09-01\\_Stratos\\_Deploys\\_New\\_StratosMAX\\_II\\_Broadband\\_Service\\_in\\_Gulf\\_of\\_Mexico](http://www.stratosglobal.com/About_Stratos/Newsroom/News_Releases/2010/2010-09-01_Stratos_Deploys_New_StratosMAX_II_Broadband_Service_in_Gulf_of_Mexico) (viewed Oct. 19, 2010).

<sup>4</sup> See Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, *Report and Order and Second Report and Order*, WT Docket No. 07-293 *et al.*, FCC 10-82, at ¶ 213 (rel. May 20, 2010).

“ducting” of signals transmitted over bodies of water.<sup>5</sup> It therefore would be virtually impossible for Stratos to continue providing emergency and other essential communications services to its Gulf customers in a reliable and timely manner if its 6 GHz links were exposed to new interference. The notion of permitting point-to-point licensees in the 6 GHz band to operate what amount to point-to-multipoint networks via potentially innumerable auxiliary links within their side lobes carries a substantial risk that communications services critical to the integrity and safety of oil and gas operations in the Gulf will be compromised. Accordingly, Stratos and its customers have a direct and immediate interest in the Commission’s disposition of the WSI Proposal.

## **II. DISCUSSION.**

### **A. There is Not Enough Information In The Record Upon Which The Commission And Other Interested Parties Can Fully Evaluate The WSI Proposal.**

The state of the record on the WSI Proposal is not robust. Notwithstanding the fact that the WSI Proposal has been pending in one form or another since 2007, the Commission finds it necessary in the *NPRM and NOI* to seek more specific information on

the types of operations for which auxiliary stations could be used. Information that would be useful would include: (1) an estimate of how many systems parties contemplate operating with auxiliary stations, (2) information on whether such systems would typically be deployed in urban or rural areas, (3) the types of uses to which such systems would be put, (4) the contemplated distances between the auxiliary stations and the main link, and (5) the relative amount

---

<sup>5</sup> See *Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Licensing in the Multipoint Distribution Service and in the Instructional Television Fixed Service for the Gulf of Mexico*, Notice of Proposed Rulemaking, 17 FCC Rcd 8446, 8464 (2002) (“[D]ucting is a phenomenon whereby a radio signal is trapped within and between stratified layers of the atmosphere which have non-uniform refractivity indexes. This layering is caused by climatological processes such as subsidence, advection, surface heating and radiative cooling and the ducts created due to these factors can extend for distances of tens to hundreds of miles. Ducting . . . enables these signals to travel relatively unattenuated for distances far greater than would occur without the presence of the duct.”).

of traffic anticipated to be carried on the main link versus the auxiliary links.<sup>6</sup>

These are not minor details – without them, neither the Commission, Stratos nor any other interested party can fully evaluate, for example, the “real world” interference ramifications of the WSI Proposal, the sufficiency of the interference protection the Commission proposes to provide to affected point-to-point licensees, or whether the WSI Proposal offers any benefits to the public (aside from mere conjecture) that warrant the risk of new interference, particularly to point-to-point links that are used and relied upon extensively for safety-related and other critical operations. As shown below, the WSI Proposal is highly flawed as it is. The dearth of essential information in the record only makes it more so.

**B. The WSI Proposal Is Based On Dubious Factual Assumptions and False Generalizations About Point-to-Point Service in the 6 GHz Band.**

The WSI Proposal appears to be based on certain fundamental assumptions: (1) that the existing RF environment could accommodate the proposed usage of auxiliary links without creating an unacceptable risk of interference to 6 GHz licensees; (2) that side lobe transmissions create a *de facto* zone of preclusion that would permit auxiliary links to co-exist with nearby primary links without causing interference; (3) that the proposed use of auxiliary links will permit greater reuse of the 6 GHz spectrum and will otherwise promote spectral efficiency; (4) that it is possible for FDD and TDD usage to co-exist peacefully in the 6 GHz band; and (5) that any risk of interference from auxiliary links to primary links will become immaterial if the Commission requires that auxiliary links be pre-coordinated and affords them secondary status. Stratos’s own experience, reinforced by the separate comments being filed by Comsearch in this proceeding, confirms that these assumptions are dubious or simply wrong.

---

<sup>6</sup> *NPRM and NOI* at ¶ 54.

The side lobes of a primary link in the 6 GHz band are not “greenfield” for operation of auxiliary links. Indeed, the Commission has previously recognized that the 6 GHz band has become highly congested.<sup>7</sup> This is especially true in the Gulf, where hundreds of pre-coordinated, licensed 6 GHz links already operate in close proximity to each other, in many cases in the side lobes of other co-channel carriers. Substantial reuse of frequencies within the side lobes is common. In this situation, it is highly likely that a carrier’s operation of a *de facto* point-to-multipoint system in the side lobes of its primary link will cause interference to the primary links of other 6 GHz users.<sup>8</sup>

The Commission must also account for the WSI Proposal’s impact on the ability of existing 6 GHz licensees to expand or modify their systems to meet the perpetually increasing customer demand for bandwidth.<sup>9</sup> This issue is especially relevant to Stratos, since its network in the Gulf has nearly reached full capacity. The problem, as explained by Comsearch, is that the WSI Proposal provides point-to-point licensees with an incentive to operate at the highest permitted EIRP, *i.e.* 85 dBm, in order to create maximum operating room for auxiliary links. By contrast, most licensed point-to-point links currently operate with EIRPs at least 10 to 20 dB

---

<sup>7</sup> *Id.* at ¶ 56.

<sup>8</sup> To further illustrate the problem, Exhibit 1 hereto depicts the relationship between the primary link (or “main lobe”) and the side lobes of a representative 6 GHz antenna in Stratos’s network. The relationship is expressed in terms of angle of radiation and directivity (dBi). Exhibit 2 (which is a depiction of the same antenna) shows that the angle of radiation in the side lobes differs from that of the main lobe by approximately five degrees. Increasing the amount of energy in the side lobes to optimize auxiliary links will necessarily expand the range of the side lobes farther and wider, thus increasing the potential for interference with neighboring primary links in a spectrally congested area.

<sup>9</sup> See *NPRM and NOI* at ¶ 56 (“Recently, we noted that [the Lower 6 GHz Band] has become highly congested and that there are areas where it is impossible to coordinate 30 megahertz bandwidth links. While the Commission authorized 30 megahertz bandwidth links in the Upper 6 GHz band in the *6/23 GHz R&O*, we anticipate that there will be considerable demand for those frequencies.”) (footnote omitted).

lower than 85 dBm. Worse, the Commission is also proposing to exempt auxiliary links from the directional antenna standards it applies to primary links.<sup>10</sup>

Clearly, the operation of point-to-point links at unnecessarily high power with widebeam, wide aperture antennas is a model of spectral inefficiency. Yet, because that model would also expand the range of a point-to-point licensee's auxiliary links, it is precisely what the Commission will invite should it adopt the WSI Proposal. Equally important, as a practical matter Stratos cannot avoid the resulting interference by switching to antennas with narrower beamwidths. Due to the existing spectral congestion in the Gulf, Stratos is already using antennas with very narrow beamwidths – the typical antenna in Stratos's network uses an 8-foot dish with an angle of radiation of only 1.8 degrees.<sup>11</sup> Licensing of auxiliary links per the WSI Proposal would force Stratos to deploy new antennas with even narrower bandwidths, with dish sizes of twelve feet or more. These antennas are either very costly or commercially unavailable. Hence, the inevitable “crowding out” effect of the WSI Proposal will make it much more difficult for Stratos and other *bona fide* point-to-point operators to give their customers more bandwidth when they want it, which presumably is the opposite of what the Commission is attempting to achieve in this proceeding.

The Commission suggests that a point-to-point licensee that deploys auxiliary links could avoid interference to other licensees' primary links by alternating transmissions between [its own] primary station and the auxiliary stations on a time-division multiplexed [“TDD”] basis.”<sup>12</sup> Comsearch's filing explains why TDD operation in point-to-point spectrum is neither a solution

---

<sup>10</sup> *Id.* at ¶ 52.

<sup>11</sup> Other 6 GHz licensees in the Gulf are doing the same thing – otherwise, it would be impossible for them to co-exist without causing harmful interference to each other.

<sup>12</sup> *Id.* at ¶ 52.

to the problem nor good spectrum policy, and Stratos agrees with that assessment. Furthermore, the TDD issue highlights why Stratos itself cannot take advantage of WSI's proposal. In a TDD system, the master microwave site antenna sends out a "sync" signal which locks onto the system's remote units and starts their cycle of timing down. In turn, each remote unit establishes communication with its associated base station upon reaching its assigned time slot. The 6 GHz radios in Stratos's network are OC3 or 155Mb. With this amount of bandwidth, the network cannot give the remote unit enough time to transmit its data without keeping the next remote offline for an excessive amount of time. The system would begin to lose all safety and operational data as well as all voice circuits from the site that is waiting for its time slot. Simply put, TDD operation is not suitable for high bandwidth systems and is not a feasible alternative for Stratos.

In addition, the WSI Proposal assumes too much to the extent it suggests that the interference risk can be significantly reduced by requiring that auxiliary links be pre-coordinated. As an initial matter, it is difficult to assess the value of pre-coordination absent more information in the record to exactly how, when and where auxiliary links might be deployed, and what they will be used for. More fundamentally, "real world" signal propagation in the Gulf often varies due to the effects of ducting, multipath reflection and changing weather conditions. If adopted, the WSI Proposal will increase that variability by incenting 6 GHz licensees to operate at unnecessarily high power with cheaper widebeam antennas. In many cases this may widen the gap between predicted interference and actual interference, and thus give Stratos and other 6 GHz users in the Gulf little comfort that they will not receive potentially destructive interference from auxiliary links, even if pre-coordinated.<sup>13</sup>

---

<sup>13</sup> Stratos and other 6 GHz users also will draw little comfort from the fact that an auxiliary link's associated primary link has already been pre-coordinated. The coordination process for a primary link

Finally, affording secondary status to auxiliary links is at best a weak remedy. While helpful, secondary status is not a panacea for interference – the history of the unlicensed bands proves as much. In the vast majority of cases, assigning secondary status to auxiliary links will only provide affected licensees of primary links with *post hoc* relief – they can order an auxiliary link to cease operations *after* the objectionable interference has already occurred. This is not an acceptable paradigm for customers who, like those of Stratos, rely heavily on primary links for safety and other critical operations that protect lives, property and essential infrastructure. By the time an interfering auxiliary link has been identified and terminated, the damage has been done.

In sum, there is every indication that the WSI Proposal will do far more harm than good. Absent compelling evidence to the contrary and appropriate protection of 6 GHz users, the WSI Proposal should be denied.

Respectfully submitted,

STRATOS OFFSHORE SERVICES  
COMPANY

By: /s/ Bruce A. Heno  
Bruce A. Heno  
Vice President and General Counsel

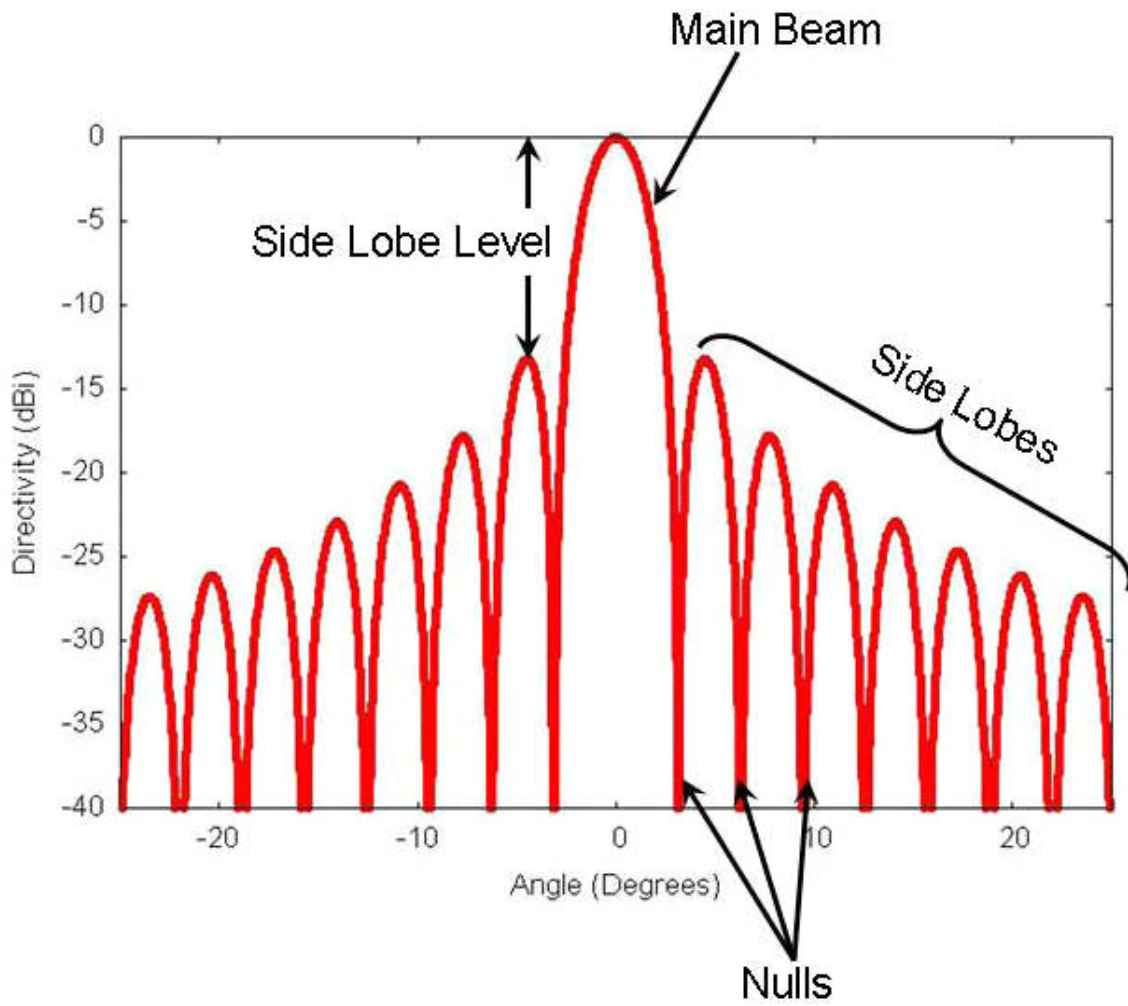
Stratos Global  
6550 Rock Spring Drive, Suite 650  
Bethesda, MD 20817  
(301) 968-1938

October 25, 2010

---

accounts for energy within the side lobes, to ensure that the side lobes do not cause interference to other primary links. In a typical point-to-point link, the energy in the side lobes is substantially less (e.g., by 20 to 30 dB) than the energy in the primary link. Under the WSI Proposal, however, users of auxiliary links will likely pump far more energy into their side lobes to maximize coverage, thus rendering the original coordination of the primary link obsolete.

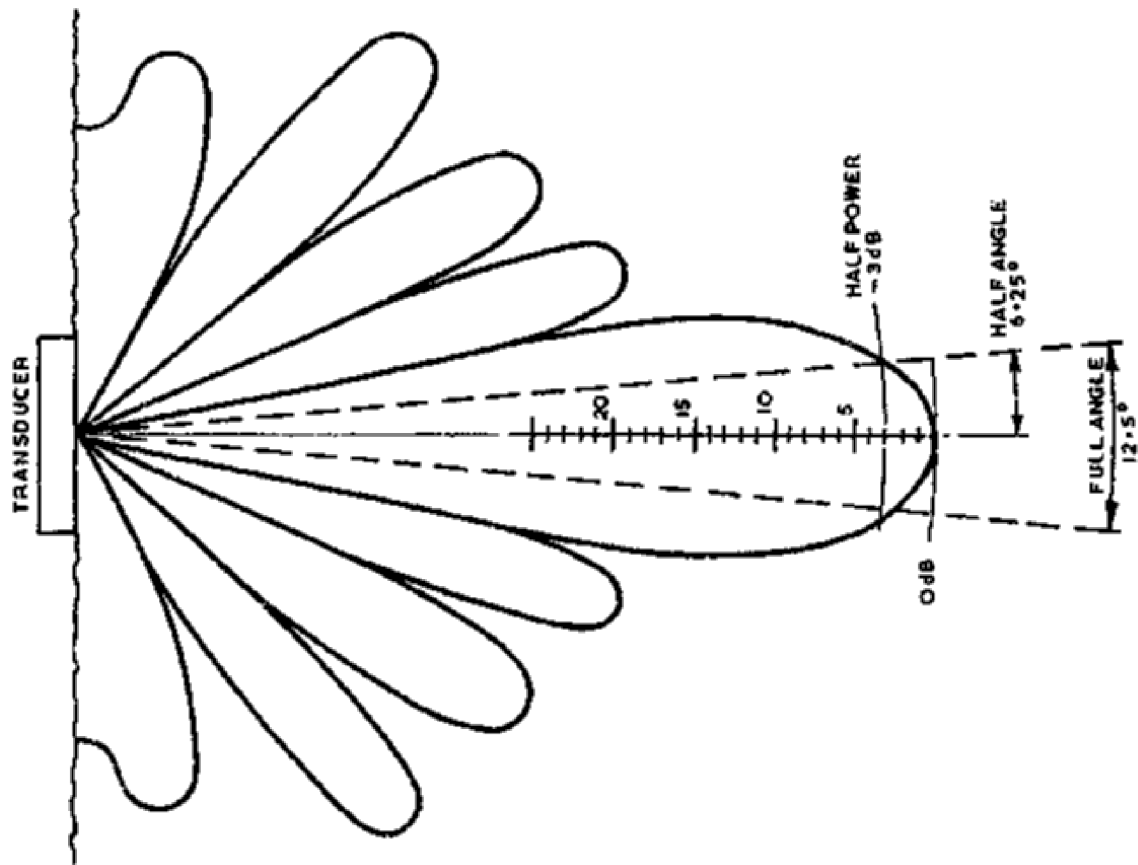
# Exhibit 1



Picture # 1

## Exhibit 2

Date: 092010



Picture #2  
Date: 092010